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March 4, 2015

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte - *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band* - GN Docket No. 12-354

Dear Ms Dortch:

Federated Wireless, Inc. submits this letter to urge the Federal Communications Commission (the "Commission") to consider carefully and cautiously a number of recent proposals made by CTIA – The Wireless Association ("CTIA") and others with respect to the Citizens Broadband Radio Service (the "Citizens Band" or the "3.5 GHz Band"). These proposals include:

- assigning static frequencies for Priority Access Licenses ("PALs") in the 3.5 GHz Band;¹
- permitting Spectrum Access Systems ("SAS") to reside within a carrier's network without protective conditions or restrictions;² and
- using radio technology in the General Authorized Access ("GAA") tier that does not support standalone operation, specifically, Licensed Assisted Access LTE ("LAA-LTE").³

Adopting these proposals will undermine the Commission's goals and objectives for the Citizens Band. The Citizens Band is intended to serve as an "innovation band" to explore the next generation of *shared spectrum* and small cell technologies, drive greater productivity and *efficiency* in spectrum use,⁴ bring to life the 3.5 GHz sharing regime described by PCAST, and promote "a

¹ See Letter from Scott Bergmann, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, at 1 of attached slide presentation (filed Jan. 12, 2015) ("CTIA Ex Parte").

² See *id.* at 2 of attached slide presentation.

³ See *id.* at 2 of attached slide presentation. By standalone operation, we mean under its own control and in contrast to LAA-LTE, which expressly requires connectivity to other wireless technology for its operation.

⁴ *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Further Notice of Proposed Rulemaking, 29 FCC Rcd 4273, ¶ 2 (2014) ("FNPRM").

diverse array of network technologies” that can be expanded into other spectrum bands.⁵ Proposals to assign static frequencies for PALs, permit SASs to reside in a carrier’s network without protective conditions or protections, and anchor the control channel for Citizens Band LTE operations in a licensed frequency will clearly benefit large global carriers, allowing them to extend their exclusive operations into the 3.5 GHz Band, but it will not encourage exploration of *shared spectrum* technologies or drive more *efficient* spectrum use. Instead, these proposals, if adopted, will threaten critical interoperability in the Citizens Band, depress open competition, and discourage innovation in diverse technologies, spectrum sharing, and the development of low-cost small cell technology. The absence of interoperability also will depress investment in innovative in-building wireless solutions, which can be offered through non-traditional sources. These solutions are needed today and could be implemented by enterprises themselves, but this will not occur without interoperability.

I. If Static Frequencies are Assigned for PALs, Interoperability in the Citizens Band Will Be In Jeopardy; Assigning Static Frequencies is Inconsistent With Dynamic SAS Operations and is Not Needed to Protect Incumbents.

Assigning static frequencies for PAL users will enable the largest carriers to develop equipment that only tunes to their channels, jeopardizing interoperability and innovation in the Citizens Band. This is directly inconsistent with the Commission’s goals in this proceeding and is unnecessary to protect incumbents.

A. Interoperability in the Citizens Band is Critical, and The Commission Must Make It A Requirement.

In the FNPRM, the Commission rightly proposes requiring that all Citizens Broadband Radio Service Devices (“CBSDs”) operating in the 3.5 GHz Band are interoperable across all frequencies, from 3550-3700 MHz.⁶ The Commission emphasizes that requiring interoperability throughout the band will ensure that all CBSDs and end user devices certified to operate in the band will be capable of sending and receiving information regardless of the frequencies assigned by the SAS.⁷ This interoperability is essential to fostering innovation and efficient spectrum use by ensuring that all PAL and GAA users have access to the same equipment.

CTIA’s proposal to assign static frequencies for PALs is inconsistent with the Commission’s goal of ensuring equipment interoperability throughout the band. Rather than encourage interoperability and competition, assigning static frequencies for PALs would, similar to the Lower 700 MHz Band, encourage the largest carriers to develop and deploy equipment that only tunes to their channels. GAA users will be left behind without solutions for equipment, and without the market power and influence to have equipment manufactured. The Commission and industry saw this happen before, in the Lower 700 MHz Band, and advance planning is needed to ensure that it does not happen again in the Citizens Band.

In taking steps to correct the lack of interoperability in the Lower 700 MHz Band, the Commission emphasized that ensuring interoperability throughout the band satisfied its statutory

⁵ *Id.*

⁶ *See id.*, ¶ 64.

⁷ *See id.*

mandate to promote nationwide service.⁸ The Commission found that the existence of two incompatible band classes is a substantial obstacle to the ability of subscribers to switch their service provider to take advantage of higher quality or lower cost service.⁹ Accordingly, “by establishing a clear path to interoperability, [the Commission] promote[s] consumers’ ability to choose the higher quality service at affordable prices and thus increased competition.”¹⁰ The Commission further found that “achieving interoperability will help promote deployment of mobile broadband services and the full and efficient use of . . . spectrum,” and that the record showed that “the absence of interoperability has delayed deployment of networks in the Lower 700 MHz band spectrum.”¹¹

It is critical that the Commission avoid recreating the same types of interoperability and competition problems that arose in the Lower 700 MHz Band. Consistent with the Commission’s vision, non-static frequencies are needed in the PAL tier that can be dynamically managed and/or combined with the GAA tier, facilitating clear interoperability throughout the band. In contrast to the Lower 700 MHz Band proceeding, the Commission has an opportunity in this proceeding to insist upon clear interoperability requirements for Citizens Band equipment before standards are set by the 3rd Generation Partnership Project (“3GPP”).

B. Assigning Static Frequencies for PALs Also is Inconsistent With the Commission’s Goal of Using Dynamic SAS Operations to Maximize Flexible and Efficient Spectrum Use, and to Encourage Innovation.

Federated Wireless commends the Commission’s proposed use of SASs in the Citizens Band to dynamically assign PAL channels and GAA bandwidth in real time to promote efficient spectrum use while minimizing interference.¹² Next-generation SASs will dynamically assign 3.5 GHz spectrum, permitting GAA users to operate on a range of frequencies within the GAA pool, as well as on PAL frequencies on an opportunistic basis where those frequencies have not been temporarily assigned to PALs or where PAL frequencies are not in actual use by PAL licensees.¹³ The Commission’s goal is to maximize flexibility in the band, allowing a SAS to determine channel assignments based upon demand in a geographic area at any given time, thereby enhancing spectral efficiency and minimizing “interference scenarios.”¹⁴

⁸ See *Promoting Interoperability in the 700 MHz Commercial Spectrum, et al.*, WT Docket Nos. 12-69 and 12-332, Report and Order and Order of Proposed Modification, 28 FCC Rcd 15122, ¶ 53 (2013) (“Lower 700 MHz Band Order”) (“Evidence in the record shows that the absence of interoperability has affected . . . [the] ability to deploy broadband services in the Lower 700 MHz bands. By eliminating barriers to deployment by small and rural providers, [the Commission] takes another important step toward fulfilling [its] mandate to bring these advanced services, ‘so far as possible, to all the people of the United States.’”) (internal citations omitted).

⁹ See *id.*, ¶ 50.

¹⁰ *Id.*

¹¹ *Id.*, ¶ 51.

¹² See FNPRM, ¶ 28.

¹³ See *id.*, ¶ 33.

¹⁴ *Id.*, ¶ 48.

CTIA's proposal to assign static frequencies for the PAL tier is entirely inconsistent with the Commission's intention to authorize SASs to flexibly and dynamically manage and/or combine the PAL and GAA tiers, promoting the most efficient, effective, innovative and shared use of all of the Citizens Band spectrum. In view of CTIA's membership, its request to exclusively assign PAL spectrum to specific frequencies is not surprising, but this is contrary to the Commission's goals for this band. PAL licenses are not intended to be traditional, static, exclusive use licenses but, rather, short-term permitted access to PAL spectrum without set frequency assignments.¹⁵ Although PAL users will be guaranteed use of 10 MHz of spectrum, and certain interference protection from GAA users, they are not, by design, guaranteed specific frequencies.¹⁶ The Commission has not contemplated attaching exclusive-use / licensed spectrum rights and obligations to PALs spectrum, and has, instead, specifically promoted a license-by-rule framework for the Citizens Band that will maximize the efficiency and flexibility of spectrum use in the band.¹⁷ The Commission should stay the course on this issue.

CTIA's request to assign static frequencies for PALs would severely limit the ability of the SAS to dynamically manage interference and accommodate all PAL and GAA uses of the Citizens Band in the most efficient manner possible. Moreover, if PAL users are given exclusive frequency assignments, and allowed to self-manage their use, there will be no incentive to make unused spectrum in the PAL tier available for use by GAA users. This, in turn, would unquestionably lead to static PAL and GAA allocations, or sub-bands, which would significantly harm innovation and competition in the band. These are not the outcomes the Commission is trying to achieve in this proceeding.

C. Allocating Static Frequency Assignments for PALs Is Not Necessary to Protect Incumbents in the 3.5 GHz Band.

Despite CTIA's assertions, static PAL frequency assignments will not enhance protection to incumbent operations. Implicit in CTIA's proposal is the suggestion that use of 3.5 GHz frequencies by federal incumbents is similarly conducted on a limited, static basis whereby PAL frequencies could be pre-assigned to maximize incumbent protection. However, as *a priori* knowledge of the time, location, duration and extent of frequency use by federal incumbents is not known, static frequency assignments for PALs would provide no discernable benefits to provide protection to, or reduce interference from, incumbent federal uses.

If PAL frequencies are static and not actively managed by the SAS, then it follows that the SAS will provide limited benefit in managing GAA frequencies, as well. The ability of the SAS to manage interference both among access tiers and among users in a given tier will be severely

¹⁵ *Id.*, ¶¶ 33, 47-49 (“Under our proposal, in place of fixed channel assignments, the SAS would dynamically assign bandwidth within given geographic areas to Priority Access Licensees and GAA users in accordance with the procedures set forth in the proposed rules. The SAS would ensure that Priority Access Licensees have access to allotted 10 megahertz channels and that GAA users are provided access to at least 50 percent of the band. However, the exact spectral location of any given authorization, whether Priority Access or GAA, would not be fixed.”).

¹⁶ *Id.*

¹⁷ *Id.*, ¶ 48 (“Dynamically assigning spectrum based upon the demand within a geographic area at a given time would promote efficient use of the band across wider geographic areas without compromising flexibility.”).

undercut. If a frequency is in use by an incumbent, the SAS will be limited in its ability to reassign channels to satisfy all desired uses of the spectrum. In that case, the SAS would do little more than provide binary indications on spectrum availability, and spectrum users would have no means by which to continue operating when incumbent users are present.

In its filing, CTIA promotes as a goal “to ensure that this spectrum is put to the maximum use possible.” Exclusion zones, while necessary to protect incumbent operations, do inherently limit the amount of spectrum available for use in the Citizens Band. CTIA asserts that it should be possible to “reduce exclusion zones, through better modeling, database approaches, and sensing technologies.”¹⁸ While some reduction in the size of exclusion zones may be achieved through these approaches, it will not be possible to eliminate these zones altogether. The modeling methods proposed by CTIA are not the best solution to the challenging problem of protecting incumbents while maximizing spectrum availability of a geographic basis.

Predictably, CTIA is not truly focused on *spectrum sharing* and incumbent protection, but it is instead focused on extracting a greater quantity of spectrum from incumbent users to be put to use by its largest members. In this proceeding, the industry and the Commission should be seeking ways in which the sharing of spectrum in areas of close proximity to incumbent operations (*i.e.*, within static exclusion zones) can be achieved. This is the true goal of spectrum sharing, and reduction or elimination of the static exclusion zones alone is not necessary in light of the advanced capabilities of SASs. Such methods would rely on a number of factors, including but not limited to real-time information about spectrum requirements, radio channel conditions, aggregate transmission power levels of the incumbent and commercial systems, and interference susceptibility thresholds. A dynamic SAS, as envisioned by the Commission in the proposed rules, is the very system that will be capable of obtaining and processing this information to maximize spectrum utilization. The Commission can have confidence in the effectiveness of the SASs, as envisioned, and the reduction of exclusion zones is not necessary.

II. If Carriers Are Permitted to Undertake SAS Management, Safeguards Are Needed to Ward Against Anticompetitive Conduct and to Ensure Open Competition and SAS Interoperability; Operating a SAS Within a Carrier’s Network Is Not Necessary to Protect Incumbents or Meet Carriers’ Needs.

Large carrier operation of a SAS, in the carrier’s network, is not necessary to protect incumbents or meet carriers’ needs. However, to the extent the Commission permits carriers to operate SASs within their networks, the Commission must protect open competition by adopting enforceable safeguards to ensure that such SASs are fully interoperable with other SASs and GAA users throughout the band, and that carriers do not operate such SASs in an anticompetitive manner (*i.e.*, as a “private SAS”).

A. Without Adequate Safeguards, Allowing SAS Management Functions to Reside Within a Carrier’s Network Could Prevent Open Competition and Discourage Innovation.

To the extent the Commission permits carriers to operate SASs within their networks, the Commission should ensure interoperability by requiring that the interfaces among SASs and varied

¹⁸ CTIA Ex Parte at 1.

networks are formally standardized and non-proprietary. In fact, as the Commission is aware, the Wireless Innovation Forum recently established a multi-stakeholder Spectrum Sharing Committee to, among other activities, establish SAS interface standards.¹⁹ However, absent a clear requirement for interoperability through standardized and non-proprietary SAS interfaces in the rules, there is little reason to believe that such work would continue.

Standards-based SAS interfaces will ensure that SASs are interoperable throughout the band, and that larger carriers and equipment manufacturers are not able to use proprietary SAS interfaces as a means to stymie competition. If a carrier operating in the PAL tier were allowed to use a proprietary, non-interoperable SAS, other SAS operators would have no ability to access the unused spectrum in that PAL and assign it to a GAA user. Contrary to the Commission's goals, this would result in the establishment of a private SAS, which in turn would result in inefficient spectrum use, less competition, and less innovation. To prevent this outcome, it is essential that the Commission adopt clear interoperability requirements for the entire 3.5 GHz Band, ensuring the seamless exchange of information among SASs, and ensuring that open competition and innovation are able to thrive. Requiring standardized and fully interoperable SAS interfaces will ensure equal access to spectrum for all PAL and GAA users, as envisioned by the Commission, and also will enable other SAS users to detect any discriminatory or anticompetitive SAS practices by PAL licensees.

Furthermore, the Commission should require that all SASs are operated in a transparent manner, and that all SAS operators make information publicly available regarding its operation of the SAS sufficient to confirm that the SAS is not being operated in a discriminatory or anticompetitive manner. These requirements should include the ability of the Commission to audit the SAS operator with respect to its operation of the SAS in response to a complaint or Commission-initiated investigation.

Moreover, if a carrier elects to operate its own SAS, it should be obligated to make its SAS available to others under reasonable commercial agreements. An equal access provision for SAS operation will encourage the development of market-driven interoperability solutions and standards among providers of SAS technology and network equipment manufacturers. Both operators and equipment manufacturers will be encouraged to seek out the best SAS solution and the most competitive prices.²⁰

B. Permitting SAS Management Functions to Reside Within a Carrier's Network is Not Necessary to Protect Incumbents or Meet Carriers' Needs.

While larger carriers may find it advantageous from a business perspective to operate their own SASs, operating a SAS within a carrier's network is unnecessary from a technological

¹⁹ See Letter from Lee Pucker, CEO, Wireless Innovation Form, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-354, Notice of Ex Parte (filed Feb. 26, 2015).

²⁰ While Federated Wireless supports an open, competitive marketplace for SAS providers, it appears likely that the marketplace will evolve to support fewer, more commercially viable providers. With appropriate regulation, the SAS marketplace will remain competitive and free of entry and exit barriers, such that economic inefficiency will not necessarily result from increased market concentration. A fragmented market, as may result from the one-SAS-per-network approach, appears improbable given the associated operational and administrative costs which would be a burden for the FCC, incumbents, and the SAS operators themselves.

standpoint. Indeed, there is no technological reason an independent SAS cannot protect incumbents in the band and meet the operational needs of carriers just as well as, or better than, a SAS operated within a carrier's network. For example, through a standardized interface to the Radio Resource Management ("RRM") functions residing within an LTE network, a SAS that is independent of a carrier network will be fully capable of optimizing frequency assignments, coordinating frequency assignments across PALs, protecting incumbents, minimizing interference, incorporating requirements for mobility management in accordance with the needs of PAL licensees, supporting carrier aggregation needs among PAL spectrum holdings, and meeting any other carrier needs in the band by analyzing radio environmental health conditions.

Privacy concerns also do not provide a justification for a SAS to be operated within a carrier's network. The SAS developed by Federated Wireless, for example, comprehensively protects the privacy of all network participants, analyzing only the data necessary to avoid interference and assign frequencies, analyzing customer data only in the aggregate, and not retaining any such data after it is used by the SAS.

III. Licensed Assisted Access LTE Technology Should Not Be Permitted, Would Have Anticompetitive Results, and is Not Technologically Necessary.

In the Citizens Band proceeding, and others, the Commission should promote technology neutrality while ensuring a level playing field. To that end, technology permitted for use in the GAA tier should both be capable of interoperability over the entire band of frequencies, and be capable of operating in a standalone manner. Use of any technology that cannot operate without the assistance of a wireless technology operated on another frequency – for example, LAA-LTE technology – would discourage competition and enable larger, licensed carriers and equipment manufacturers to dominate the 3.5 GHz market, foreclosing use of Citizens Band spectrum by smaller, competitive carriers and other GAA users. Moreover, Qualcomm's proposal for LAA-LTE is not technologically needed to make use of LTE technology in GAA spectrum.

A. Adopting the Proposed "Licensed Assisted Access" Standard for LTE Use of GAA Spectrum Would Favor Larger, Licensed Carriers in the Citizens Band, Foreclosing Use By Others.

Under the proposed LAA-LTE standard, which is currently under consideration at 3GPP, a primary cell with licensed spectrum is used to deliver critical information such as control channel signaling and guaranteed Quality of Service, while a secondary cell using unlicensed spectrum is used to opportunistically boost the data rate.²¹ The inextricable combination of licensed and unlicensed spectrum, as proposed with the LAA-LTE standard, would essentially lock up the entire Citizens Band, allowing larger, licensed operators to dominate the entire 3.5 GHz Band and foreclose the use of PAL and GAA spectrum by smaller competing carriers and equipment manufacturers.

As emphasized by the National Cable & Telecommunications Association ("NCTA"), "LAA's dependence on licensed spectrum would raise barriers to entry across the 3.5 [GHz] bands by tying the use of this spectrum to carriers' existing licensed spectrum portfolios. . . . LAA would

²¹ See, e.g., "LTE in Unlicensed Spectrum," 3GPP News Release (June 19, 2014), *available at* <http://www.3gpp.org/news-events/3gpp-news/1603-lte-in-unlicensed>.

distort these nascent markets by allowing carriers to use their control of licensed frequencies to dominate the 3.5 GHz band.”²² The New America’s Open Technology Institute further emphasizes that LAA does not “simply raise interoperability and competition problems,” but also “creates the danger of significant interference with non-LAA operations.”²³ These outcomes would be directly contrary to the Commission’s goal of ensuring that the entire Citizens Band is available for dynamic use as an “innovation band” by both PAL and GAA users without limiting the availability of spectrum to the larger, licensed carriers.

Large carriers should not be permitted to use the LAA standard as a backdoor way to circumvent the Commission’s objectives in this proceeding. Without a different standard for LTE unlicensed (“LTE-U”), and clear interoperability requirements established by the Commission to prevent anticompetitive behavior, global carriers holding PAL authorizations, together with large equipment manufacturers, have every incentive to corner the 3.5 GHz market and discourage open competition.

If the proposed LAA standard is adopted and implemented by the major carriers, economies of scale will make it difficult, if not impossible, for smaller competitors to manufacture and deploy equipment using a competing standard.²⁴ Therefore, it is critical that Qualcomm’s LAA proposal be modified at this stage in the process in order to provide a version of LTE in unlicensed spectrum that does not require a control channel anchored in a licensed frequency. The proposed LAA standard is currently a study item under consideration at 3GPP and, accordingly, can still be modified.²⁵ Providing for a version of LTE in unlicensed spectrum that does not require anchoring to LTE in a licensed frequency would facilitate interoperability and ensure that the 3.5 GHz Band can be dynamically used by PAL and GAA users, as the Commission envisioned.

B. Anchoring the Control Channel in a Licensed Frequency is Not Technologically Necessary for Implementation of LTE-U.

Initial ideas and proposals for LTE-U were shared at a 3GPP Workshop held in June 2014. As the TSG-RAN Chairman noted in his workshop report, there was debate on the deployment models and modes of operation to be considered. However, there was strong interest to start first with LAA operation leveraging on the existing LTE Carrier Aggregation framework. Other

²² Letter from Rick Chessen, Senior Vice President, NCTA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-354, Notice of Ex Parte at 2 (filed Feb. 27, 2015) (“NCTA Ex Parte”).

²³ Letter from Michael Calebrese, Open Technology Institute, and Harold Feld, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-354, Notice of Ex Parte at 2 (filed Feb. 18, 2015).

²⁴ See *id.* at 3 (“First, as the Commission well knows from its experience with 700 MHz interoperability, carriers and manufacturers will adopt 3GPP standards in order to achieve economies of scale. It therefore appears certain that, once 3GPP adopts a standard for Licensed Assisted Access using Qualcomm patented technology, it will be adopted globally and deployed broadly in the U.S.”).

²⁵ See Sarah Thomas, “Qualcomm Brings LTE-U to Small Cells, LightReading (Feb. 26, 2015), *available at* http://www.lightreading.com/mobile/small-cells/qualcomm-brings-lte-u-to-small-cells-/d/d-id/714008?itc=lnnewsletter_mobiledaily. LAA-LTE is currently under consideration for LTE Release 13 and is targeted for commercial launch sometime in the first half of 2016. This is clearly a technology still under development.

proposals included Dual-Connectivity and Standalone operation for LTE-U.²⁶ There is no specific impediment to LTE operation in unlicensed spectrum in an autonomous, standalone mode of operation apart from the efforts required to develop and implement the standard itself.

It should be no surprise that the 3GPP standards body opted to focus on the LAA mode first. A standards body dominated by the largest global carriers and equipment makers would logically focus on the mode that is of most immediate benefit to them. The LAA proposal allows the operator to treat unlicensed spectrum as just another band to *aggregate* under their licensed bands.²⁷ LAA-LTE is little more than a Trojan Horse for the largest, licensed carriers to seize control of GAA spectrum using their market influence to prevent the development of alternative technology standards. As NCTA emphasizes, “Commission rules that require or favor the use of LAA would grant a subset of companies the power to use their control of licensed spectrum – whether in PAL channels or in other licensed frequencies – to undermine consumer use of GAA channels, substantially reducing the value and competitiveness of the 3.5 GHz band.”²⁸ Permitting use of LAA-LTE in the 3.5 GHz band cuts against both the Commission’s goals in this proceeding and its broader policy goals for unlicensed spectrum in general.

Proposals for LTE-U include a “Listen-Before-Talk” mechanism for LTE to coexist with Wi-Fi.²⁹ As this mechanism is already under consideration in the standards development process, the adjustments necessary to make LTE-U operate in a standalone mode, as Wi-Fi does today, appears straightforward. Carriers can still derive the benefits of LTE in unlicensed spectrum without the need for LAA.

C. A Global LTE Ecosystem Already Exists at 3.5 GHz. The Commission Should Encourage Expansion of this Ecosystem to the Citizens Band.

Just as PAL spectrum is not the same as exclusive-use licensed spectrum, GAA spectrum is not the same as unlicensed spectrum. CTIA’s proposal implies that PAL and GAA frequencies are little more than licensed and unlicensed bands. The Commission has established a unique and innovative framework for the PAL and GAA spectrum that will work for the benefit of all.

As noted previously, the PALs frequencies differ from GAA only in the interference protection and frequency assignment priorities conveyed to them. Apart from this single issue, there is little difference between how frequencies are assigned and how interference is managed by the SAS. Existing capabilities of LTE, along with the frequency coordination and interference management of a dynamic SAS, make it possible for standards-based LTE to be deployed in a coordinated manner. In fact, LTE-U is not needed for operation in GAA frequencies just as it is not needed for operation in PAL frequencies. The inclusion of the dynamic SAS in the 3.5 GHz Band

²⁶ See Chairman Summary, 3GPP Workshop on LTE in Unlicensed Spectrum, Sophia Antipolic, France (June 13, 2014), available at http://www.3gpp.org/ftp/workshop/2014-06-13_LTE-U/Docs/RWS-140029.zip.

²⁷ See *LTE Licensed Assisted Access*, Ericsson Whitepaper, available at http://www.ericsson.com/res/thecompany/docs/press/media_kits/ericsson-license-assisted-access-laa-january-2015.pdf.

²⁸ NCTA Ex Parte at 2.

²⁹ See *LTE in Unlicensed Spectrum: Harmonious Coexistence with WiFi*, Qualcomm Technologies, Inc., at 15 (June 2014), available at <https://www.qualcomm.com/media/documents/files/lte-unlicensed-coexistence-whitepaper.pdf>.

allows for technology otherwise reserved for conventional licensed bands to be used in the quasi-unlicensed frequencies.

The Commission does not need to adopt the contention-based protocol mandate proposed by the Open Technology Institute and Public Knowledge for standalone operation of LTE. Instead, conventional LTE technology can be implemented where both the interference management capabilities of LTE and the dynamic SAS will result in coordinated, interference-free operations on GAA frequencies. Carriers can use advanced Inter Cell Interference Coordination and other Heterogeneous Network functionality, which already has been standardized by the 3GPP, to achieve the same level of dynamic spectrum coordination it seeks to achieve with LTE-U.

A global ecosystem of standards-based LTE technology already exists at 3.5 GHz whereas neither a standard, nor an ecosystem, for LTE-U exists today.³⁰ Even if a standalone mode for LTE-U operation could be developed under 3GPP, it could still take multiple years for the LTE-U ecosystem to develop. Like LTE-U, there is currently no ecosystem for Wi-Fi at 3.5 GHz, and it is conceivable that the ecosystem would develop on a similar timescale. Conventional LTE technology that is already viable in a global ecosystem clearly has the time-to-market advantage. The Commission should not impose unique technical standards, such as a contention-based protocol, for operation of the GAA frequencies as it will impede commercialization of the Citizens Band. Contention-based protocols are not specifically required for GAA operation when the SAS provides interference management. As such, should the Commission be considering proposals involving contention-based protocols, such use should only be required when the dynamic SAS is otherwise not providing the requisite interference management for coexistence.

IV. Conclusion.

Federated Wireless urges the Commission to consider carefully and cautiously proposals made by CTIA and others that would, in essence, treat the Citizens Band as just another band that carriers can *aggregate* under their licensed bands. There should be no question that proposals to assign static frequencies for PALs, permit SASs to reside in a carrier's network without protective conditions, and anchor the control channel for Citizens Band LTE operations in a licensed frequency will benefit large global carriers, allowing them to extend their exclusive operations into the 3.5 GHz Band. The Commission should reject these Trojan Horse proposals, and not allow the largest, licensed carriers to seize control of Citizens Band spectrum, using their market influence to threaten critical interoperability, depress open competition, and discourage innovation in diverse technologies, spectrum sharing, and the development of low cost small cell technology. Every effort

³⁰ See, e.g., *LTE TDD—the global solution for unpaired spectrum*, Qualcomm Technologies, Inc., at 4 (Sept. 2014), available at <https://www.qualcomm.com/media/documents/files/lte-tdd-the-global-solution-for-unpaired-spectrum.pdf>. As noted in a recent press release, Softbank began trials of LTE Advanced at 3.5 GHz in late 2013. See “World’s First LTE-A 3.5 GHz Trial Network in Japan Achieves 770 Mb/s Max Download Speed” (Sept. 11, 2013), available at <http://pr.huawei.com/en/news/hw-308475-lte.htm#.VPXVPMbi6fQ>; see also Letter from China Mobile, Datang Mobile, and Huawei to Chairman Wheeler, FCC, GN Docket No. 12-354, at 1, 4 (filed July 14, 2014) (“3.5 GHz is being increasingly recognized as the most probable global harmonized TDD band and will play a key role in meeting the explosive mobile data demands. ... The matured TDD ecosystem of 3.5 GHz band will help FCC members to perform a fast network deployment. By adopting TDD mode, U.S. operators will be able to cooperate with operators in other countries and regions to develop the global TDD market on 3.5 GHz band. We believe it will leverage the economics of scale and benefit all the partners of 3.5 GHz ecosystem.”).

Federated Wireless, Inc.
March 4, 2015

should be made to preserve the Commission's goals in this proceeding, allowing the Citizens Band to serve as a true innovation band.

Respectfully submitted,

_____/s/
Kurt Schaubach
Chief Technology Officer
Federated Wireless, Inc.